

Attorney Docket: K-2081  
S.N.: 10/766,396

### REMARKS

Claims 1-17 are pending in the application. By this Amendment, Claim 5 is amended, and Claims 13-17 are added. Favorable reconsideration is respectfully requested in light of the following Remarks.

1. The Office action rejects Claims 3, 7 and 11 under 35 U.S.C. §112, second paragraph asserting that the claimed tool length of approximately 80-120 mm is not supported by the specification. The rejection is respectfully traversed.

By this Amendment, Paragraph [0019] of the specification is amended to include that the tool length, L, is in a range of approximately 3.15 inches (80 mm) to approximately 4.72 inches (120 mm), and preferably in a range of approximately 3.54 inches (90 mm) to approximately 4.33 inches (110 mm), and most preferably approximately 3.94 inches (100 mm). Withdrawal of the rejection is respectfully requested.

The Office action also asserts that there is no criticality for the claimed range of the tool length, L, of approximately 3.15 inches (80 mm) to approximately 4.72 inches (120 mm). Applicant respectfully disagrees with this assertion.

As stated in Paragraph [0019] of the specification, it is necessary to allow the spindle housing 108 to clear the work holding device (i.e., the chuck 122 and chuck jaws 124). By inclining or tilting the toolholder spindle 106 at 45.0 degrees, for example, with respect to the axis, P, (and also the longitudinal axis, LW, of the workpiece 120), the tool length, L, can be shortened and still allow clearance for the spindle housing 108 with the work holding device. Because the clamping mechanism of the spindle that holds the toolholder assembly 10 has a substantially constant clamping force, a shorter tool length, L, will yield less deflection under load and provide better cutting performance.

In view of the foregoing, it is respectfully submitted that the specification clearly points that the relatively shorter tool length, L, allows the spindle housing 108 to clear the chuck 122 and chuck jaws 124, while yielding less deflection under load and providing better cutting performance, as compared to a conventional toolholder with a relatively longer tool length, L, of at least 150 mm. Thus, the specification clearly points out the criticality of the relatively shorter tool length, L, as compared to conventional toolholders.

Attorney Docket: K-2081  
S.N.: 10/766,396

2. The Office action rejects Claims 1, 4, 5, 8, 9 and 12 under 35 U.S.C. §102(b) over Yamazaki et al. (U.S. Patent No. 6,453,782, hereinafter "Yamazaki"). The rejection is respectfully traversed.

Yamazaki discloses a machine tool that is designed to produce various thread forms with a minimum of insert styles. The machine tool includes a slide or carriage capable of moving in a conventional X-Z plane. *See col. 2, lines 46-53*. A tool base mounted in the slide is capable of being inclined at various angles with respect to the axis of the work piece. *See Abstract*. An insert is installed on the tip of the main body of the tool rest. By inclining tool base, the machine tool of Yamazaki provides a method for varying the lead cutting angle of the insert in the X-Z plane. *See Figs. 3 and 4b*. This range of angles only can occur in the X-Z plane and cannot exceed a total travel of 180 degrees in the X-Z plane. The various angles of inclination allow multiple thread forms to be turned with a single insert style. *See col. 1, lines 48-54*.

A claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently described in a single prior art reference. *See MPEP §2131*. Contrary to the Office action that all of the elements of Claims 1, 5 and 9 are disclosed in Yamazaki, at least the feature of a cutting insert mounted to a toolholder and having a nose radius with a center, RC, that is aligned with a centerline, LT, of the toolholder, is not disclosed, taught or suggested in Yamazaki. At best, Yamazaki mentions that the insert is installed on the tip of the main body 21a of the tool rest 20. *See col. 3, lines 4-11*. Thus, the rejection is unsupported by the art and should be withdrawn.

For at least this reason, Claims 1, 5 and 9 are allowable over the applied art. Claim 4, which depends from Claim 1, Claim 8, which depends from Claim 5, and Claim 12, which depends from Claim 9, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

3. The Office action rejects Claims 2, 3, 6, 7, 10 and 11 under 35 U.S.C. §103(a) over Yamazaki. The rejection is respectfully traversed.

Applicant asserts that the Office action fails to establish a *prima facie* case of obviousness for several reasons. *See MPEP §2143*. First, as stated above, Yamazaki does not disclose all of the claim limitations, as recited in Claims 1, 5 and 9. Specifically, there is no mention in Yamazaki of at least the feature of a cutting insert mounted to a toolholder and

Attorney Docket: K-2081  
S.N.: 10/766,396

having a nose radius with a center, RC, that is aligned with a centerline, LT, of the toolholder, as recited in Claims 1, 5 and 9. In addition, there is no mention in Yamazaki of a tool spindle, as recited in Claim 5.

Because the center of the nose radius of the insert is substantially located on the centerline of the toolholder/spindle, several distinct advantages are realized. For example, locating the nose radius on the centerline of the toolholder/tool spindle eliminates any insert center height variations due to any inaccuracies in radial positioning of the spindle or toolholder/tool spindle connection. In addition, locating the nose radius on the centerline of the tool spindle minimizes the torque component of the cutting force on the tool holder/tool spindle connection, thereby increasing its deflection under load performance.

Second, even if all the claim limitations are provided in Yamazaki, there is no motivation to modify the machine tool of Yamazaki to meet the claimed invention. Yamazaki is directed to a machine tool that varies the lead cutting angle of the insert in the X-Z plane. *See Figs. 3 and 4b.*

On the other hand, the claimed invention is directed to a toolholder mounted in a tool spindle that can be rotated 360 degrees around its own axis while the nose radius centerline of the insert intersects the centerline of the tool spindle. The toolholder assembly is also designed to present the cutting insert to the work piece at an inclination angle of about 25 to 45 degrees with respect to a line perpendicular to the work piece centerline in a direction away from the direction of cut, as recited in Claims 2, 6 and 10. On the other hand, there is no mention in Yamazaki of a toolholder mounted in a tool spindle that is designed to be inclined at an angle of 25 to 45 degrees away from the direction of cut with respect to a line perpendicular to the work piece centerline with the center of its nose radius substantially located on the centerline of the tool spindle.

By inclining the toolholder assembly 25 to 45 degrees from a line perpendicular to the work piece centerline in a direction away from the cut direction, several distinct advantages are realized. For example, inclining the toolholder assembly 25 to 45 degrees from a line perpendicular to the work piece centerline in a direction away from the cut direction allows the overall length of the tool to be shortened, thus decreasing the forces on the toolholder assembly during cutting. In addition, inclining the toolholder assembly 25 to 45 degrees from a line perpendicular to the work piece centerline in a direction away from the cut direction directs more of the resultant cutting force into the toolholder/tool spindle connection, thereby

Attorney Docket: K-2081  
S.N.: 10/766,396

lessening the effect of trying to remove the toolholder from the tool spindle.

In addition, the claimed invention is directed to providing a toolholder assembly having a reduced overall length, as recited in Claims 3, 7 and 11. By reducing the overall length of the toolholder assembly, the effect of cutting forces on the toolholder/spindle connection can be significantly reduced. In addition, locating the nose radius on the centerline of the tool spindle minimizes the torque component of the cutting force on the tool holder/tool spindle connection, thereby increasing its deflection under load performance.

Further, Applicant strongly disagrees with the Official Notice taken by the Examiner, and seasonably challenges the Official Notice. Thus, Applicant requests that the Examiner provide written documentation of such Official Notice in response to this communication.

In view of the foregoing, the Office action fails to establish a *prima facie* case of obviousness. For at least this reason, Claims 2, 3, 6, 7, 10 and 11 are allowable over the applied art. Withdrawal of the rejection is respectfully requested.

In addition, new dependent Claims 15, 16 and 17 further define the feature that the centerline, LT, of the toolholder is aligned in a direction away from a direction of cutting of the work piece. By contrast, Yamazaki teaches that the cutting tool is angled in the direction of cut to achieve a specific thread form.

It is respectfully submitted that this feature is not disclosed, taught or suggested in the applied art, taken singly or in combination. For at least his additional reason, Claims 15-17 are allowable over the applied art, taken singly or in combination.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of the application is earnestly solicited.

Should Examiner Addisu believe anything further would be desirable in order to place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

Attorney Docket: K-2081  
S.N.: 10/766,396

Respectfully submitted,

Dated: June 30, 2005

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